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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,912	03/05/2002	Richard R. Bott	GC724	9189

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GENENCOR INTERNATIONAL, INC.
ATTENTION: LEGAL DEPARTMENT
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EXAMINER	
STEADMAN, DAVID J	
ART UNIT	PAPER NUMBER
1656	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/091,912	BOTT ET AL.	
	Examiner	Art Unit	
	David J. Steadman	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,19,28,30,31 and 33-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,19,28,30,31 and 33-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

[1] A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/15/07 has been entered.

[2] Claims 1, 19, 28, 30-31, and 33-50 are pending in the application.

[3] Applicant's amendment to the claims, filed on 2/15/07, is acknowledged. This listing of the claims replaces all prior versions and listings of the claims.

[4] Applicants' arguments filed on 2/15/07 have been fully considered.

[5] The text of those sections of Title 35 U.S. Code not included in the instant action can be found in a prior Office action.

Claim Objection

[6] Claim 33 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19, from which claim 33 depends, limits the substitution at position 194 to Val. However, claim 33 recites amino acids other than Val at position 194. Thus, claim 33 fails to further limit claim 19.

Claim Rejections - 35 USC § 112, Second Paragraph

[7] Claims 33 and 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

[a] Claim 33 is confusing in that claim 19, from which it depends, limits the substitution at position 194 to Val. However, claim 33 recites amino acids other than Val at position 194. It is unclear as to how a polypeptide with a Val corresponding to position 194 of SEQ ID NO:2 can simultaneously have other amino acids at the same position. It is suggested that applicant clarify the meaning of the claim.

[b] Claim 40 is confusing as indicating "Ser at position 219" is a mutation. A review of the sequence listing of SEQ ID NO:2 indicates that Ser219 is the original, *i.e.,* non-mutant, amino acid at position 219. It is suggested that applicant clarify the meaning of the claim.

[8] The rejection of claims 1, 19, 28, 30-31, and 33-50 as being indefinite in the recitation of "wild-type *Pseudomonas mendocina* cutinase" or "wild-type *P. mendocina* cutinase" is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in a prior Office action.

RESPONSE TO ARGUMENT: Applicant argues "[t]he specification teaches that the precursor protein...is the *P. mendocina* cutinase SEQ ID NO:2," pointing to p. 10, lines 14-17 of the specification.

Applicant's argument is not found persuasive. As noted in the prior Office action, the definition "wild-type" as given in the specification is "a precursor protein from which a variant is derived" (p. 6, lines 30-31). Although applicant appears to take the position that the term "wild-type" is meant to refer to SEQ ID NO:2, it is noted that according to MPEP 2111.01.IV, "[w]here an explicit definition is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. *Toro Co. v. White Consolidated Industries Inc.*, 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999)." MPEP 2111.01.II states, "it is important not to import into a claim limitations that are not part of the claim." Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). According to MPEP 2111, "[d]uring patent examination, the pending claims must be 'given their broadest reasonable interpretation consistent with the specification.'" In this case, interpreting the term "wild-type" as SEQ ID NO:2 would result in an improperly narrow interpretation of the scope of the claim, because, as noted in a prior Office action, the definition of "wild-type" as provided in the specification encompasses not only those proteins that occur "naturally," but also encompasses mutant and variant proteins that are themselves precursors prior to further mutation. Put another way, in view of this definition of "wild-type," the claims encompass mutants of mutants. Because applicant asserts the term "wild-type" to encompass a narrow scope, namely SEQ ID NO:2, while the specification defines the scope of the term as being much broader, it is unclear as to applicant's intended meaning of the term. In accordance with applicant's admission that "wild-type"

P. mendocina cutinase is intended as being limited to SEQ ID NO:2, it is suggested that applicant amend the claim accordingly. See MPEP 2111, which states, "[a]pplicant always has the opportunity to amend the claims during prosecution." While applicant admits the term "wild-type" is intended as being limited to SEQ ID NO:2, the specification, in accordance with MPEP 2111, the examiner has given the claims their broadest reasonable interpretation, construing the term "wild-type" as encompassing mutant and variant proteins that are themselves precursors prior to further mutation.

Claim Rejections - 35 USC § 112, First Paragraph

[9] Claims 30-31, 35, 37, and 40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. It is noted that claim 40 is included to the extent Ser is the original, *i.e.,* non-mutant, residue present in SEQ ID NO:2.

MPEP § 2163 states, "when filing an amendment an applicant should show support in the original disclosure for new or amended claims" and "[i]f the originally filed disclosure does not provide support for each claim limitation, or if an element which applicant describes as essential or critical is not claimed, a new or amended claim must be rejected under 35 U.S.C. 112, para. 1, as lacking adequate written description."

The claims are drawn to cutinase variants with mutations at positions corresponding to amino acids 192 and 194 of SEQ ID NO:2 (corresponding to positions 178 and 180 as disclosed in the specification or recited in the original claims) or at positions corresponding to amino acids 192 and 219 of SEQ ID NO:2 (corresponding to positions 178 and 205 as disclosed in the specification or recited in the original claims).

While the examiner can find support for a Met192/Val194/Gly219 triple mutant (see, *e.g.,* p. 17, Table 3), the examiner can find no support for a 192/194 or a 192/219 double mutant as encompassed by the claims. It is acknowledged that original claim 1 recited, "[a] cutinase variant comprising substituting one or more amino acids at residue positions corresponding to sites 57-66, 68, 85, 86, 88, 125-127, 130, 148-152, 154, 155, 176-183, or 204-211 of Pseudomonas mendocina cutinase SEQ ID NO:2." However, while the 192/194 or 192/219 double mutants are encompassed by the original claim 1, as acknowledged by the Court in *In re Ruschig*, 379 F.2d 990, 995, 154 USPQ 118, 123 (CCPA 1967), "a 'laundry list' disclosure of every possible moiety does not constitute a written description of every species in a genus because it would not 'reasonably lead' those skilled in the art to any particular species." See also *Purdue Pharma L.P. v. Faulding Inc.*, 56 USPQ2d 1481 (Fed. Cir. 2000), wherein the Court stated, "[a]s *Ruschig* makes clear, one cannot disclose a forest in the original application, and then later pick a tree out of the forest and say 'here is my invention.' In order to satisfy the written description requirement, the blaze marks directing the skilled artisan to that tree must be in the originally filed disclosure." Applicant is invited to show support for the limitation(s) at issue.

[10] The new matter rejection of claims 1, 19, 31, 34-41, 44, and 46-50 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and the reasons stated below. The rejection was fully explained in the prior Office action.

RESPONSE TO ARGUMENT: Applicant argues the rejection is obviated by amendment "to recite the specific substitution(s) that are contained in the cutinase variant(s)."

Applicant's argument is not found persuasive. In this case, the amendment fails to overcome the new matter rejection. As noted in prior Office actions, the basis for the rejection is a lack of support in the original application for a cutinase variant having mutation at position 192 or 194 and any other mutations having the combination of increased polyesterase activity and enhanced thermostability. While applicant argues the amendment to recite "containing" or "contains" limits the variants to having the specifically recited substitution(s), it is noted that according to MPEP 2111.03, "[t]he transitional term 'comprising', which is synonymous with...'containing,'...is inclusive or open-ended and does not exclude additional, unrecited elements or method steps." As such, the examiner has construed the claims in accordance with MPEP 2111.03 and MPEP 2111 as encompassing a cutinase variant with mutation at position corresponding to 192 or 194 of SEQ ID NO:2 and any other mutations, wherein the variant has increased polyesterase activity and/or enhanced thermostability.

Applicant is invited to show support for the limitation at issue in the claims.

[11] The written description rejection of claims 1, 19, 28, 30-31, and 33-50 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and for the reasons stated below. The rejection was fully explained in a prior Office action.

RESPONSE TO ARGUMENT: Applicant argues the rejection is obviated by amendment and that the claims as amended are directed to cutinase variants "containing" specific mutations.

Applicant's argument is not found persuasive. In this case, the amendment fails to overcome the written description rejection. As noted in prior Office actions, the basis for the rejection is the failure of the disclosed representative species to reflect the structural variation among the members of the genus. While applicant argues the amendment to recite "containing" or "contains" limits the variants to having the specifically recited substitution(s), it is noted that according to MPEP 2111.03, "[t]he transitional term 'comprising', which is synonymous with...'containing,'...is inclusive or open-ended and does not exclude additional, unrecited elements or method steps." As such, the examiner has construed the claims in accordance with MPEP 2111.03 and MPEP 2111 as encompassing a cutinase variant with mutation at position corresponding to 192 or 194 of SEQ ID NO:2 and any other mutations, wherein the variant has increased polyesterase activity and/or enhanced thermostability. Thus, while the claims recite the specific mutation(s) corresponding to position(s) 192, 194, 192/194, or 192/194/219 of SEQ ID NO:2, the remaining sequence of the resulting variant polypeptide is completely undefined. As such, the genus of claimed cutinases encompasses species that are widely variant with respect to their structures. While the

cutinase variants are required to have the "common structural characteristic" of mutation at position corresponding to 192, 194, 192/194, or 192/194/219 of SEQ ID NO:2, this "common structural characteristic" does not constitute a substantial portion of the genus. In view of the substantial variation among species of the genus and that the "common structural characteristic" does not constitute a substantial portion of the genus, the disclosed representative species of variants of SEQ ID NO:2, wherein a position or positions corresponding to 192, 194, 192/194, or 192/194/219 is/are mutated, fail to represent the entire genus of claimed cutinase variants. Consequently, the claimed genus of cutinase variants is not adequately described by the specification.

[12] The scope of enablement rejection of claims 1, 19, 28, 30-31, and 33-50 under 35 U.S.C. 112, first paragraph, is maintained for the reasons of record and for the reasons stated below. The rejection was fully explained in a prior Office action.

RESPONSE TO ARGUMENT: Applicant argues the rejection is obviated by amendment and that the claims as amended are directed to cutinase variants "containing" specific mutations.

Applicant's argument is not found persuasive. In this case, the amendment fails to overcome the written description rejection. As noted in prior Office actions, the basis for the rejection is that undue experimentation is required to make the full scope of the claimed cutinase variants. While applicant argues the amendment to recite "containing" or "contains" limits the variants to having the specifically recited substitution(s), it is noted that according to MPEP 2111.03, "[t]he transitional term 'comprising', which is

synonymous with...'containing,'...is inclusive or open-ended and does not exclude additional, unrecited elements or method steps." As such, the examiner has construed the claims in accordance with MPEP 2111.03 and MPEP 2111 as encompassing a cutinase variant with mutation at position corresponding to 192 or 194 of SEQ ID NO:2 and any other mutations, wherein the variant has increased polyesterase activity and/or enhanced thermostability. Thus, while the claims recite the specific mutation(s) corresponding to position(s) 192, 194, 192/194, or 192/194/219 of SEQ ID NO:2, the remaining sequence of the resulting variant polypeptide is completely undefined. Accordingly, the examiner has broadly, but reasonably interpreted the claims as being drawn to a cutinase variant having mutation at position 192 and 194 *and any position(s) corresponding to SEQ ID NO:2.* As such, the claims broadly encompass a vast number of cutinase variants without providing guidance regarding those variants that will likely exhibit the desired increased thermostability and optionally increased polyesterase activity. As previously noted (see pp. 12-13 of the Office action mailed 1/29/2004), and undisputed by applicants, without such guidance, it is highly unpredictable as to which mutation(s) in addition to positions 192, 194, 192/194, or 192/194/219 can be made with an expectation of maintaining the desired activity/utility. In view of the lack of guidance and working examples, trial and error experimentation is required to make the full scope of claimed variants, which was not routine at the time of the invention. Further, it is noted that the examiner's position that there is a high level of unpredictability in making all cutinase variants as encompassed by the claims is supported by applicant's instant response, which states (in relevant part), "[a]t the time the invention was made it was

well established that altering amino acid sequences could result not only in differences in expression and secretion levels of the protein but also alter the properties of the protein" and that because "[i]t is very likely that altering the amino acids in the catalytic region would result in a decrease in the enzymatic activity or thermostability...one skilled in the art would not have a reasonable expectation of success in altering the amino acid sequence as presently claimed...would enhanced thermostability and/or polyesterase activity" (instant response at p. 11, bottom). Thus, in accordance with applicant's statement, while a skilled artisan would have an expectation of success for obtaining cutinase variants having enhanced thermostability and/or polyesterase activity by mutating SEQ ID NO:2 according to those specifically disclosed embodiments, one of skill in the art would not have an expectation of success for obtaining such variants at other positions of SEQ ID NO:2. As such, it is the examiner's position that undue experimentation would be required for a skilled artisan to make the full scope of cutinase variants as broadly encompassed by the claims.

Claim Rejections - 35 USC § 103

[13] Claim(s) 1, 28, 39, 41-42, 47, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poulouse et al. The claims (in relevant part) are drawn to variants of *P. mendocina* cutinase having mutation at a position corresponding to Ile192 or Phe194 of SEQ ID NO:2, wherein the variant has increased polyesterase activity and/or enhanced thermostability (claims 1 and 39) or wherein the variant is more thermostable and has hydrolytic activity on polyester (claims 28 and 41-42).

Poulouse et al. teach that it would be useful to modify *P. mendocina* cutinase in order to alter its perhydrolysis/hydrolysis ratio, kcat, and Km (column 2, lines 52-54). In order to do this, Poulouse suggest altering an amino acid within "about six amino acids on either side of a catalytic amino acid" of *P. mendocina* cutinase (column 5, lines 42-57). See also claim 4, which narrows the alteration(s) to within four amino acids of the catalytic amino acid. Poulouse et al. identify Ser126, Asp176, and His206 (as acknowledged by applicant, corresponding to amino acids 140, 190, and 220, respectively, of SEQ ID NO:2 herein) as the *P. mendocina* cutinase catalytic triad amino acids (column 7, lines 12-14). Poulouse et al. suggest replacing each of the amino acids within six of the catalytic triad with the 19 other amino acids to select for those that have the "best ratio or substrate specificity" (column 6, lines 41-47). Poulouse et al. do not actually mutate an amino acid within "about six amino acids on either side of a catalytic amino acid" of *P. mendocina* cutinase.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to mutate position 178 or 180 of the *P. mendocina* lipase of Poulouse et al. (corresponding to amino acid 192 or 194 of SEQ ID NO:2 herein) with any amino acid. One would have been motivated to mutate position 178 or 180 of *P. mendocina* lipase in order to mutate an amino acid within 6 amino acids of a catalytic amino acid as suggested by Poulouse et al. One would have a reasonable expectation of success for mutating position 178 or 180 of *P. mendocina* lipase of Poulouse et al. because of the results of Poulouse et al. Therefore, claims 1, 28, 39, 41-42, 47, and 49,

drawn to the *P. mendocina* cutinase variant as described above would have been obvious to one of ordinary skill in the art at the time of the invention.

[14] Claim(s) 30-31, 35, 37, 43-46, 48, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poulouse et al. The claims (in relevant part) are drawn to variants of *P. mendocina* cutinase having mutation at a position corresponding to Ile192 and Phe194, Ile192 and Ser219, or Phe194 and Ser219 of SEQ ID NO:2, wherein the variant has increased polyesterase activity and/or enhanced thermostability or wherein the variant is more thermostable and has hydrolytic activity on polyester.

The teachings of Poulouse et al. are described above. Poulouse et al. further teaches that multiple substitutions within the six amino acids of the catalytic triad "can be done to optimize the results" (column 6, lines 47-49) and show working examples of double mutants, comprising mutation of Ser205 (corresponding to position 219 of SEQ ID NO:2 herein) and another amino acid position within six amino acids of the catalytic triad, which maintain catalytic activity (columns 15-18). See also claim 4, which narrows the range of amino acids to four amino acids within the catalytic triad amino acid. Poulouse et al. do not actually make a double mutant of *P. mendocina* cutinase as encompassed by the claims.

Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to mutate position 178 or 180 and position 205 of the *P. mendocina* lipase of Poulouse et al. (corresponding to amino acid 192 or 194 and 219, respectively, of SEQ ID NO:2 herein) with any amino acid. One would have been

motivated to make a double mutant at positions 178 or 180 and 205 of *P. mendocina* lipase in order to attempt "to optimize the results" as suggested by Poulouse et al. One would have a reasonable expectation of success for mutating position 178 or 180 and 205 of *P. mendocina* lipase of Poulouse et al. because of the results of Poulouse et al. Therefore, claims 30-31, 35, 37, 43-46, 48, and 50, drawn to the *P. mendocina* cutinase variant as described above would have been obvious to one of ordinary skill in the art at the time of the invention.

[15] Claim(s) 19, 33-34, 36, 38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poulouse et al. The claims (in relevant part) are drawn to variants of *P. mendocina* cutinase having mutation at a position corresponding to Ile192, Phe194, and Ser219 of SEQ ID NO:2 herein, wherein the variant has increased polyesterase activity and/or enhanced thermostability or wherein the variant is more thermostable and has hydrolytic activity on polyester.

The teachings of Poulouse et al. are described above. Poulouse et al. further teaches that multiple substitutions within the six amino acids of the catalytic triad "can be done to optimize the results" (column 6, lines 47-49), see also claim 4, which narrows the range of amino acids to four amino acids within the catalytic triad amino acid. Poulouse et al. do not actually make a triple mutant of *P. mendocina* cutinase as encompassed by the claims.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to mutate position 178, 180, and position 205 of the *P. mendocina* lipase of

Poulouse et al. (corresponding to amino acid 192, 194, and 219, respectively, of SEQ ID NO:2 herein) with any amino acid. One would have been motivated to make a triple mutant at position 178, 180, and 205 of *P. mendocina* lipase because of the specific guidance of Poulouse et al. to make multiple substitutions within the six amino acids of the catalytic triad mutate in order to attempt "to optimize the results" as suggested by Poulouse et al. One would have a reasonable expectation of success for mutating position 178, 180, and 205 of *P. mendocina* lipase of Poulouse et al. because of the results of Poulouse et al. Therefore, claims 19, 33-34, 36, 38, and 40, drawn to the *P. mendocina* cutinase variant as described above would have been obvious to one of ordinary skill in the art at the time of the invention.

RESPONSE TO ARGUMENT: Applicant argues the reference does not teach or suggest the activity of any mutant enzyme for polyester as is required for the instant claims and thus, according to applicant, the claimed invention would not have been obvious in view of the teachings of Poulouse et al.

Applicant's argument is not found persuasive. Poulouse et al. teaches it would be useful to modify *P. mendocina* cutinase in order to alter its perhydrolysis/hydrolysis ratio, kcat, and Km (column 2, lines 52-54). In order to do this, Poulouse suggest altering "about six amino acids on either side of a catalytic amino acid" of *P. mendocina* cutinase (column 5, lines 42-57). Poulouse et al. identify Ser126, Asp176, and His206 (as acknowledged by applicant, corresponding to amino acids 140, 190, and 220, respectively, of SEQ ID NO:2 herein) as the *P. mendocina* cutinase catalytic triad amino

acids (column 7, lines 12-14). Poulouse et al. suggest replacing each of the amino acids within six of the catalytic triad with the 19 other amino acids to select for those that have the "best ratio or substrate specificity" (column 6, lines 41-47). This a clear suggestion to make all single amino acid variants within six amino acids of the catalytic triad amino acid. Thus, in making the variants as suggested by Poulouse et al., one would have made the position 192 and 194 variants with any amino acid at either of these positions, which would inherently have increased polyesterase activity and/or thermostability. While it is acknowledged that Poulouse et al. did not specifically seek to increase polyesterase activity and/or thermostability, as noted in the prior Office action, MPEP § 2144 makes clear that "[i]t is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant."

Further, Poulouse et al. teach that multiple substitutions within the six amino acids of the catalytic triad "can be done to optimize the results" (column 6, lines 47-49) and show working examples of double mutants, comprising mutation of Ser205 and another amino acid position within six amino acids of the catalytic triad, which maintain catalytic activity (columns 15-18). See also claim 4, which narrows the alteration(s) to within four amino acids of the catalytic amino acid. Thus, one of ordinary skill in the art would have been motivated to make multiple substitutions in the range of amino acids identified by Poulouse et al., which would have encompassed the mutants as encompassed by the claims, wherein these mutants which would inherently have increased polyesterase activity and/or thermostability. Thus, in view of the teachings of

Poulouse et al., it is the examiner's position that the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention.

Conclusion

[16] Status of the claims:

- Claims 1, 19, 28, 30-31, and 33-50 are pending.
- Claims 1, 19, 28, 30-31, and 33-50 are rejected.
- No claim is in condition for allowance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Steadman whose telephone number is 571-272-0942. The examiner can normally be reached on Mon to Thurs, 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr Bragdon can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David J. Steadman, Ph.D.
Primary Examiner
Art Unit 1656